

B16-Blue™ IFN-α/β Cells

Murine Type I IFNs Sensor Cells

Catalog code: bb-ifnt1

<https://www.invivogen.com/b16-blue-ifnab>

For research use only

Version 19E18-MM

PRODUCT INFORMATION

Contents

• 1 vial of B16-Blue™ IFN-α/β cells (3-7 x 10⁶ cells) in freezing medium

IMPORTANT: Cells are shipped frozen. If cells are not frozen upon arrival, contact InvivoGen immediately.

- 1 ml of Zeocin™ (100 mg/ml). Store at 4°C or at -20°C.*
 - 1 ml of Normocin™ (50 mg/ml), a formulation of three antibiotics active against mycoplasmas, bacteria and fungi. Store at -20°C.*
- * The expiry date is specified on the product label.

• 1 ml of QB reagent and 1 ml of QB buffer (sufficient to prepare 100 ml of QUANTI-Blue™ Solution, a SEAP detection reagent). Store QB reagent and QB buffer at -20°C. QUANTI-Blue™ Solution is stable for 2 weeks at 4°C and for 2 months at -20°C.

Note: Data sheets for all components are available on our website.

Handling Cells Upon Arrival

Cells must be thawed immediately upon receipt and grown according to handling procedures (as described on the next page) to ensure the best cell viability and proper assay performance.

Note: Avoid freezing cells upon receipt as it may result in irreversible damage to the cell line.

Disclaimer: We cannot guarantee cell viability if the cells are not thawed immediately upon receipt and grown according to handling procedures.

Cell Line Stability

Cells will undergo genotypic changes resulting in reduced responsiveness over time in normal cell culture conditions. Genetic instability is a biological phenomenon that occurs in all stably transfected cells. Therefore, it is critical to prepare an adequate number of frozen stocks at early passages.

B16-Blue™ IFN-α/β cells should not be passaged more than 20 times to remain fully efficient. B16-Blue™ IFN-α/β cells should be maintained in growth medium supplemented with Zeocin™ (100 µg/ml). Antibiotic pressure with Zeocin™ is required to maintain the plasmid coding for SEAP.

Quality Control

Reporter activity is validated by stimulating the cells with murine IFN-α (mIFN-α), mIFN-β and type I IFN activators.

These cells are guaranteed mycoplasma-free.

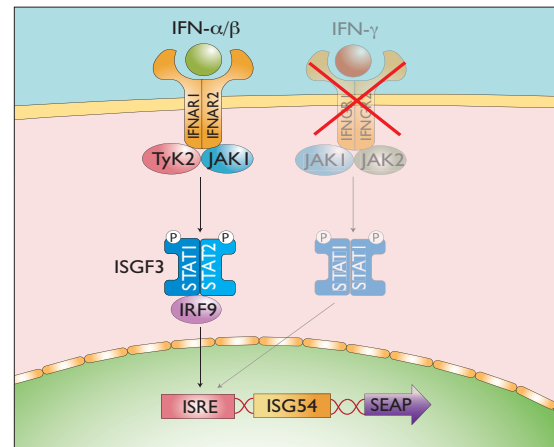
USE RESTRICTIONS

These cells are distributed for research purposes only.

This product is covered by a Limited Use License. By use of this product, the buyer agrees the terms and conditions of all applicable Limited Use Label Licenses. For non-research use, such as screening, quality control or clinical development, contact info@invivogen.com.

INTRODUCTION

Interferon-alpha (IFN-α) and interferon beta (IFN-β), play an important role in viral infections. They bind to an IFN receptor complex consisting of two alpha chains (IFNAR1 and IFNAR2) and recruit JAK1 and Tyk2. These kinases phosphorylate STAT1 and STAT2 leading to the formation of the ISGF3 complex. ISGF3 binds to IFN-stimulated response elements (ISRE) in the promoters of IFN-stimulated genes (ISG) to regulate their expression. IFN-α and IFN-β are produced in response to viral pathogen associated molecular patterns (PAMPs), such as viral RNA and DNA. Stimulation of B16-Blue™ IFN-α/β cells with dsRNA delivered intracellularly, triggers the secretion of IFN-α and IFN-β.



CELL LINE DESCRIPTION

B16-Blue™ IFN-α/β cells allow the detection of bioactive murine type I IFNs by monitoring the activation of the JAK/STAT/ISGF3 pathway. They derive from the murine B16 melanoma cell line of C57BL/6 origin after stable transfection with a SEAP reporter gene under the control of the IFN-α/β-inducible ISG54 promoter enhanced by a multimeric ISRE. B16-Blue™ IFN-α/β cells do not respond to IFN-γ, due to the inactivation of IFN-γ receptor. B16-Blue™ IFN-α/β cells respond specifically to mIFN-α/β and do not respond to human IFN-α/β. Stimulation of B16-Blue™ IFN-α/β cells with murine IFN-α or IFN-β, or type I IFN inducers, such as poly(I:C), poly(dA:dT) or 5'ppp-dsRNA delivered intracellularly, triggers the production of SEAP by the activation of the IRF-inducible promoter. Levels of SEAP in the supernatant can be easily determined with QUANTI-Blue™ Solution, a SEAP detection medium.

B16-Blue™ IFN-α/β cells are resistant to Zeocin™.

Detection range: 10² - 10⁴ IU/ml for mIFN-α/β

TECHNICAL SUPPORT

InvivoGen USA (Toll-Free): 888-457-5873

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Any questions about our cell lines ?

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SAFETY CONSIDERATIONS

Biosafety Level 1

HANDLING PROCEDURES

Required Cell Culture Medium

• **Growth Medium:** DMEM, 10% (v/v) heat-inactivated FBS (30 min at 56°C), 100 U/ml penicillin, 100 µg/ml streptomycin, 100 µg/ml **Normocin™**, 2 mM L-glutamine

Note: Heat-inactivated FBS is also commercially available.

• **Freezing Medium:** DMEM, 20% FBS, 10% (v/v) DMSO

Required Selective Antibiotic(s)

• **Zeocin™**

Initial Culture Procedure

The first propagation of cells should be for generating stocks for future use. This ensures the stability and performance of the cells for subsequent experiments.

- Thaw the vial by gentle agitation in a 37°C water bath. To reduce the possibility of contamination, keep the O-ring and cap out of the water. Thawing should be rapid (approximately 2 minutes).

- Remove the vial from the water bath as soon as the contents are thawed, and decontaminate by dipping in or spraying with 70% ethanol.

Note: All of the operations from this point should be carried out under strict aseptic conditions.

- Transfer cells in a larger vial containing 15 ml of pre-warmed growth medium. **Do not add selective antibiotics until the cells have been passaged twice.**

- Centrifuge vial at 1000-1200 RPM (RCF = 200-300 g) for 5 minutes.

- Remove supernatant containing the cryoprotective agent and resuspend cells with 1 ml of growth medium without selective antibiotics.

- Transfer the vial contents to a T-25 tissue culture flask containing 5 ml of growth medium without selective antibiotics.

- Place the culture at 37°C in 5% CO₂.

Frozen Stock Preparation

1. Resuspend cells at a density of 3-5 x 10⁶ cells/ml in freezing medium prepared extemporaneously with cold growth medium.

Note: A T-75 culture flask typically yields enough cells for preparing 3-4 frozen vials.

2. Aliquot 1 ml cells into cryogenic vials.

3. Place vials in a freezing container and store at -80°C overnight.

4. Transfer vials to liquid nitrogen for long term storage.

Note: If properly stored, cells should remain stable for years.

Cell maintenance

- Maintain and subculture the cells in growth medium supplemented with 100 µg/ml of **Zeocin™**.

- Renew growth medium twice a week.

- Cells should be passaged when a 70-80% confluency is reached. Do not let the cells grow to 100% confluency.

Do not let the cells grow to 100% confluency.

Notes:

- B16-Blue™ IFN-α/β cells produce melanin causing the culture medium to appear dark brown or black, especially when approaching a high level of confluence.

- Use B16-Blue™ IFN-α/β cells with less than 20 passages.

Reporter Assay

Day 1:

- Add 20 µl of each sample per well of a flat-bottom 96-well plate.

- Add 20 µl of positive control, such as murine IFN-α/β 10⁴ U/ml or Type I IFN inducer, in one well.

- Add 20 µl of negative control (growth medium or sterile PBS) in one well.

- Prepare a cell suspension of B16-Blue™ IFN-α/β cells at ~420,000 cells per ml in growth medium.

- Add 180 µl of cell suspension (~75,000 cells) per well.

- Incubate the plate at 37°C in a CO₂ incubator for 20-24 h.

Day 2:

- Prepare **QUANTI-Blue™ Solution** following the instructions on the enclosed product data sheet.

- Add 180 µl of resuspended **QUANTI-Blue™ Solution** per well of a flat-bottom 96-well plate.

- Add 20 µl of induced B16-Blue™ IFN-α/β cells supernatant.

- Incubate the plate at 37°C incubator for 1-5 h.

- Determine SEAP levels using a spectrophotometer at 620-655 nm.

RELATED PRODUCTS

Product	Catalog Code
LyoVec™	lyec-1
Normocin™	ant-nr-1
5'ppp-dsRNA	tlrl-3prna
5'ppp-dsRNA Control	tlrl-3prnac
Poly(dA:dT)/LyoVec™	tlrl-patc
Poly(I:C)-HMW/LyoVec™	tlrl-piclv
Poly(I:C)-HMW	tlrl-pic
Poly(I:C)-LMW/LyoVec™	tlrl-picwlv
Poly(I:C)-LMW	tlrl-picw
QUANTI-Blue™ Solution	rep-qbs
Zeocin™	ant-zn-1

TECHNICAL SUPPORT

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QUANTI-Blue™ Solution

Medium for detection and quantification of alkaline phosphatase in standard and HTS assays

Catalog code: rep-qbs, rep-qbs2

<https://www.invivogen.com/quant-blue>

For research use only

Version 18L10-MM

PRODUCT INFORMATION

Contents

QUANTI-Blue™ Solution is available in two pack sizes:

- **rep-qbs** containing 5 x 1 ml of QB reagent and 5 x 1 ml QB buffer to prepare 500 ml of QUANTI-Blue™ Solution sufficient for 25 x 96-well plates (standard procedure) or 20 x 1536-well plates (HTS screening)
- **rep-qbs2** containing 10 x 1 ml of QB reagent and 10 x 1 ml QB buffer to prepare 1 liter of QUANTI-Blue™ Solution sufficient for 50 x 96-well plates (standard procedure) or 40 x 1536-well plates (HTS screening)

Required Material (not provided)

- Sterile water
- Sterile screw cap tube, glass bottle or flask

Storage and Stability

- Store QB reagent and QB buffer at -20°C. Product is stable for 1 year at -20°C when properly stored.
- Reconstituted QUANTI-Blue™ Solution is stable for 2 weeks at 2-8°C and for 2 months at -20°C. Protect QUANTI-Blue™ from light.

Quality Control

- Each lot is thoroughly tested to ensure the absence of lot-to-lot variation.
- Physicochemical characterization (including pH, solubility).
- Functional assays using alkaline phosphatase or SEAP-expressing reporter cells.

DESCRIPTION

QUANTI-Blue™ is a colorimetric enzyme assay developed to determine any alkaline phosphatase activity (AP) in a biological sample, such as supernatants of cell cultures. QUANTI-Blue™ Solution changes from pink to a purple-blue color in the presence of AP.

Secreted embryonic alkaline phosphatase (SEAP) is a widely used reporter gene. It is a truncated form of placental alkaline phosphatase, a GPI-anchored protein. SEAP is secreted into cell culture supernatant and therefore offers many advantages over intracellular reporters.

FEATURES AND ADVANTAGES

- **Requires small samples of cell supernatants** - 20 µl is sufficient.
- **No need to process samples** - Preparation of cell lysates or heating of samples is not required.
- **Determine secreted AP activity without disturbing cells** - The same cell cultures can be repeatedly sampled for kinetic studies.
- **Assay can be completed in 30 min** - Hands-on time no longer than 10 min. The enzymatic activity can be detected as early as 15 min after incubation of the samples in QUANTI-Blue™ Solution.
- **Wide dynamic range allows to detect low and high levels of AP** - No need to perform multiple sample dilutions.
- **Highly sensitive for quantitative measurement** - Higher saturation threshold than with pNPP (p-nitrophenyl phosphate) resulting in more significant differences between no, low or high AP activity.
- **Extremely simple to use** - 1) Prepare solution with water, 2) add sample to detection reagent, 3) incubate at 37°C, and 4) assess AP activity.

METHODS

QUANTI-Blue™ Solution has been optimized for use in 96-well plates (standard procedure) and in 1536-well plates (high throughput screening procedure).

A. Standard procedure

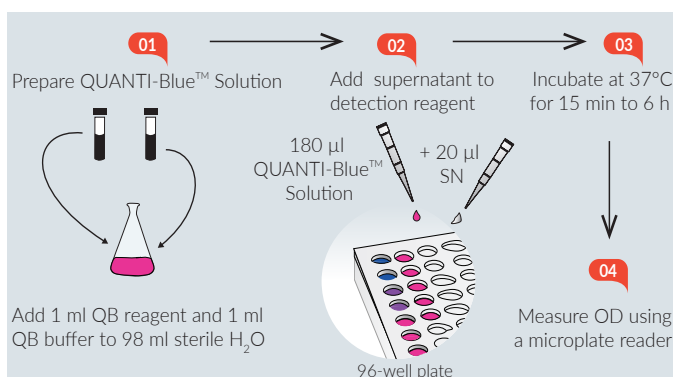


Figure 1. Standard procedure using QUANTI-Blue™ Solution.

The following protocol refers to the use of 96-well plates. Ensure QB reagent and QB buffer are completely thawed before use.

Note: For fast thawing, QB reagent and QB buffer can be placed at 37°C for 2 minutes. Ensure heating at 37°C does **not** exceed 5 minutes.

1. Prepare 100 ml of QUANTI-Blue™ Solution by adding 1 ml of QB reagent and 1 ml of QB buffer to 98 ml of sterile water in a sterile glass bottle or flask.
2. Mix well by vortexing and incubate at room temperature for 10 min before use.
3. Use QUANTI-Blue™ Solution immediately or store at 2-8°C or -20°C.
4. Dispense 180 µl of QUANTI-Blue™ Solution per well into a flat-bottom 96-well plate.
5. Add 20 µl of sample (supernatant of SEAP-expressing cells) or negative control (cell culture medium).
6. Incubate at 37°C for 15 min to 6 h.
7. Measure optical density (OD) at 620-655 nm using a microplate reader.

Note: If the negative control turns purple/blue, it means the fetal bovine serum (FBS) contains alkaline phosphatase. We recommend to heat FBS at 56°C for 30 min to inactivate the alkaline phosphatase activity.

For different cell culture plate formats, please refer to the table below:

	96-well plate	24-well plate	12-well plate
QUANTI-Blue™	180 µl	450 µl	900 µl
Supernatant	20 µl	50 µl	100 µl

TECHNICAL SUPPORT

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B. High Throughput Screening procedure

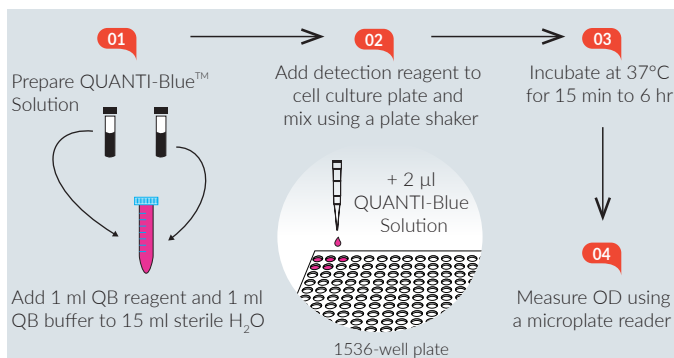


Figure 2. High throughput screening procedure using QUANTI-Blue™ Solution.

This procedure has been optimized for use directly in flat-bottom 1536-well plates, in which cell culture volume does not exceed 5 µl. Ensure QB reagent and QB buffer are completely thawed before use.

Note: For fast thawing, QB reagent and QB buffer can be placed at 37°C for 2 minutes. Ensure heating at 37°C does **not** exceed 5 minutes.

1. Prepare 17 ml of QUANTI-Blue™ Solution by adding 1 ml of QB reagent and 1 ml of QB buffer to 15 ml of sterile water in a 50 ml screw cap tube.
2. Mix well by vortexing and incubate at room temperature for 10 minutes before use.
3. Use QUANTI-Blue™ Solution immediately or store at 2-8°C or -20°C.
4. Dispense 2 µl of QUANTI-Blue™ Solution per well of a 1536-well plate.
5. Mix using a plate shaker.
6. Incubate at 37°C for 15 min to 6 h.
7. Measure OD at 620-655 nm using a microplate reader.

Note: If the negative control turns purple/blue, it means the fetal bovine serum (FBS) contains alkaline phosphatase. We recommend to heat FBS at 56°C for 30 min to inactivate the alkaline phosphatase activity.

RELATED PRODUCTS

Product	Catalog Code
pNiFty2-SEAP (Zeo®)	pnifty2-seap
pSELECT-zeo-SEAP	psetz-seap
HEK-Blue™ Detection	hb-det2
Recombinant SEAP Protein	rec-hseap
Reporter cells	
HEK-Blue™ hTLR2	hkb-htlr2
HEK-Blue™ hTLR4	hkb-htlr4
RAW-Blue™ Cells	raw-sp
THP1-Blue™ NF-κB Cells	thp-nfkb
THP1-Blue™ ISG Cells	thp-isg

For a complete list of InvivoGen's Reporter Cell Lines visit <http://www.invivogen.com/reporter-cells>

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